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EDITORIAL DEPARTMENT NOTE

Labor relations continue to be the *enfant terrible* in commerce and industry during this uneasy transition period from war to peace. Panaceas should not be expected, but any proposal whose adoption offers a fair chance to improve industrial relations deserves serious consideration. The article by Charles M. Reinherr and Paul Griek, members of the Akron Chapter, is doubly valuable because it presents a specific incentive wage plan and in addition traces the problems met in its installation.

Mr. Reinherr obtained his Bachelor's and Master's degree from the University of Pittsburgh, School of Business Administration. He joined the Firestone Tire and Rubber Co. and is at present Supervisor of the Accounting Department of the Industrial Products Division. He is Director of Publications of the Akron Chapter, of which he is a charter member. His collaborator, Paul Griek, is a product of New York University and is currently employed as Cost Accountant in the same company as Mr. Reinherr.

Our second article, "Operation of a Salvage Division," will serve to remind readers that there is gold in the hills of industrial salvage reclamation. Its author, Frank E. Lockrow, has been with the General Electric Company continuously since 1897, in itself an enviable record. At present he is in the central cost section at the Erie Works and handles special assignments relating to budgets, rate studies, material price studies, and other special cost analyses. A charter member of the Erie Chapter, he has ably served it at different times as committee member, secretary, and president.

From a purely personal point of view, almost every one these days is interested in housing. The article by Howard A. Moore of the South Bend Chapter therefore should be of value to those whose employers or clients may become engaged in increasing the nation's dwelling accommodations. A Hoosier by birth, Mr. Moore graduated from the South Bend College of Commerce. He secured his C.P.A. certificate in Indiana. He is a member of the American Institute of Accountants and the Indiana Association of Certified Public Accountants, having served as Vice President of the latter's Northern Indiana Chapter. For nineteen years he has been with Whitcomb & Keller, Inc., real estate operators and builders. He is Secretary-Treasurer of this Corporation.

Articles published in the *Bulletin* present many different viewpoints. In publishing them the Association is not sponsoring the view expressed, but is endeavoring to provide for its members material which will be helpful and stimulating. Constructive comments are welcomed and will be published in the Forum Section of the *Bulletin*.

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INSTALLING AN INCENTIVE WAGE PLAN

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and

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TODAY as we study and evaluate the factors responsible for the tremendous increase in production to meet the demands of World War II, we begin to realize and appreciate the part of wage incentive plans in this achievement. What is of far greater importance, however, is that we become keenly aware of the forceful part that wage incentive plans can also have in our postwar program. This article presents a case study of one type of wage incentive which was useful in increasing production during the war and which appears to have similar possibilities in the future.

Basis of Plan

Briefly, this incentive wage plan is a bonus based on production in excess of a standard and paid to all factory workers in a plant. Since the output of the plant as a whole is taken as the determining factor and payment is made to all workers, the plan differs from piecework which is usually based on individual production and is paid to the direct worker only. Since it is based on production, our incentive wage plan avoids the difficulties of profit-sharing plans which frequently result in bonus payments being affected by factors other than those bearing directly on production.

The plan has a number of advantages. Most important of these is that it can increase production to the mutual benefit of both the employee and the employer. In addition it is flexible, since it can be adapted to most products or plants, regardless of the method of manufacture or the size of the plant. Or if desired, it can be restricted to one or more products or to one or more departments in a plant. It is simple; it can be readily understood by the factory worker. It is also simple as to installation in that use is made of records and controls normal to most manufacturing plants. It is economical because it is less expensive to operate than most incentive plans. Finally, it can be installed with a minimum of delay.

These advantages can best be obtained when a satisfactory standard of output for a plant is known or can be readily established and where production can be accurately measured.

Case Background

The particular case used to illustrate the installation of this incentive wage plan involves a plant set up to make containers. These are fairly bulky items, being about the size of a standard office desk and having a direct labor cost to produce of approximately $20 to $30 each. Seven different types were in production when the plan was started, this number being increased later.

Approximately 700 workers were employed in the plant. Prior to installation of the incentive wage plan, they were paid on a straight hourly basis. The workers made out daily time cards, classifying their time by a series of operation numbers which gave adequate detail on direct and indirect labor. The payroll and labor distribution were handled on tabulating equipment. Employees were paid weekly, ten days after the close of the pay period.

Preparatory Work

Basic Outline of Plan

Before working out the details of the plan, certain over-all decisions had to be made regarding the general procedure to be followed. The first point to be settled was whether the incentive wage should be calculated and paid on a plant-wide or on a departmental basis. This was settled in favor of paying on a plant-wide basis.

Another important point to be decided was whether the calculation of the incentive wage should be based on both direct and indirect labor, or if it should be based on direct labor only. In either case payment was to be made to all of the workers. This question was finally decided in favor of using the direct labor base only. For one thing, a more equitable standard could be set on direct labor. Furthermore, neither time nor personnel was available to make the exhaustive analysis of indirect labor which would be essential to establishing a fair standard on this item. Moreover, much of the indirect labor depended upon the management's judgment, as for example the amount of supervision, maintenance, factory clean-up, the number of records to be kept by clerks, etc. Even if standards could be set on these items, the changes made in them from time to time would require revisions in those stand-

ards which would greatly complicate the plan and nullify the advantages it had in being simple and understandable. On the other hand, using direct labor as the basis for calculating the incentive wage meant that the plan would not control indirect labor. However, it was believed this labor could be controlled as well by other means.

Another fundamental decision which had to be made concerned the per cent of increase in production to be paid to the employees. After due consideration this was set at 50 per cent of the increase in production over standard. For example, a 30 per cent increase in production would then add 15 per cent to the employees earnings. Since the incentive wage would be paid to all the employees, and since the workers were approximately evenly divided between direct labor and indirect labor, this would make the cost of the plan to the company about the same as a piecework system. Under a piecework system the direct worker usually gets 100 per cent of the direct labor savings, and the employer gets the savings in overhead. By using the incentive wage plan and paying 50 per cent to all the workers, the company would be paying out the equivalent of all the savings on direct labor, except that the amount paid would be divided between the direct worker and the indirect worker.

It was also decided to pay the incentive weekly and to base it on the weekly average. Some consideration was given to a daily calculation of the incentive. Even though this was practical, it was ruled out since the daily figures might prove to be somewhat erratic and the payroll computation would involve additional office work.

Arrangements to Count Production

After the basic outline of the plan had been decided upon, the first step in connection with its installation was a study of the manufacturing flow of the product. This was necessary in order to establish points at which economical and accurate counts on production could be obtained. The main concern here was to establish a sufficient number of points so there would be only a minimum accumulation of work in process between points. This was important, since the incentive wage paid would depend upon these production counts. Any increase or decrease in the labor inventory between these counting points could have an adverse effect on the amount paid. In this particular case the problem of establishing these points for counting production was not too difficult. The

product was made on a straight assembly-line basis with only two minor feed lines. A departmental setup had already been established, and only a few minor changes were necessary in it. Accordingly arrangements were made to count the containers as they left and entered each of the following departments.

Department Number	*Name*
11	Form Preparation
12	Prepare Liners
13	Build
14	Cure
15	Clean
16	Finish
17	Paint
18	Pack

Setting Standards

The establishment of fair and equitable standards is undoubtedly the most important part of any incentive plan. Accordingly, it received the most consideration. Standards had to be set so that employee earnings would not fall below the minimum or exceed the maximum wage limits established by the War Labor Board. Also the setting of standards too high, so no incentive wage could be earned, would discourage the employees working under the plan. To assist in setting standards, time studies were available of the same and similar containers made in other plants. With minor adjustments, to account for differences in manufacturing procedure, these were adapted to the plant in question. Also available was the actual production time taken in this plant on each container. As is frequently the case, the actual time greatly exceeded the time study standards. Accordingly, it was first necessary to try to reduce the actual time being taken to make the containers and bring it closer to the time study standards. By eliminating shortages in materials and correcting other factors causing delays, considerable improvement was made along this line. The standards finally set were based on the time studies but were adjusted to a point where the then current rate of production would be at the approximate break-even point in the incentive wage calculation. Hence, any increase in production would then result in some incentive wage being earned. If production were further increased to a point where it equaled the time studies, a substantial incentive wage payment would result.

The standards were next set by departments, since detailed in-

formation was necessary to calculate the incentive wage. A further analysis as to operations within each department was also made to permit adjusting the standards whenever there were changes in manufacturing procedures or methods.

Excluded Employees

Although the objective was to have as many of the employees as possible participate in the bonus payments, some had to be excluded. Supervisors and office employees were excluded because they were considered a part of the management and compensated on a different basis than the hourly workers. Furthermore, their disinterested support was necessary for the fair administration of the plan. Since these persons were paid on a salary basis, no problem was involved in their exclusion. However, a problem was encountered in the exclusion of mechanics and certain other craftsmen paid on an hourly basis. These had to be excluded since the War Labor Board's approval of the incentive wage did not apply to them. This problem was handled by assigning a special series of employee clock card numbers to these excluded employees. In this way they could be readily kept separate from the employees who did participate in the incentive wage.

Learners

There is an old adage, "Into every life some grief must flow," and in this particular plan it was the conditions covering learners. Theoretically it would have been desirable to exclude these workers until they were fully trained. This was not practical as they composed a fairly large portion (25 per cent of the working force and were being trained on the production line where their output could not be segregated from that of the other employees. Moreover, it was deemed desirable to have the learners at least partially participate in the incentive wage so they would have an inducement to continue with their training and thereby reduce the plant's labor turnover. A study showed that the average learning time was approximately four weeks. Accordingly the following schedule of participation in the incentive wage was established for learners:

First 10 days worked	No Participation
After 10 days worked	25% Participation
After 15 days worked	50% Participation
After 20 days worked	75% Participation
After 25 days worked	100% Participation.

To handle this, the following procedure was established. Before the plan was put into operation the payroll was reviewed, and all employees who might still be classified as learners on the day the plan was to start were sorted out. Each of these was then entered on a card showing the per cent of participation to which they would be entitled. It was decided that changes in the amount of participation would be made only on the pay period closing date following the completion of the period shown on the foregoing schedule. The exact degree of participation of some employees could not be determined until the attendance record was checked for the last day prior to the installation of the incentive wage. The cards of these employees were set aside and processed last.

All the learners were then assigned to a special series of clock card numbers until they reached 100 per cent participation, at which time they received a new clock card number. This special card number made it possible to segregate the learners readily and give their earnings individual treatment. As a further means of identification, the daily clock cards issued to the learners were stamped, in outline letters, with their per cent of participation. This not only reminded the employees of the incentive plan, but also assisted the timekeepers in sorting and checking the cards. The learners were instructed to split their time, on their timecards, charging to direct labor the per cent of their total daily time equal to the per cent of their participation in the incentive plan and charging to indirect labor the remainder of their time.

Quality Control

To insure against production being increased at the expense of quality, it was decided to calculate the standards on accepted production only. It had been the practice in this plant to charge the cost of repairs to indirect labor. However, for purposes of the plan this was changed, and the cost of repairs was transferred to direct labor. At the same time the standards were increased to provide for a normal amount of repairs. In this manner good workmanship would result in a higher incentive wage, and any increase in production at the expense of quality would result in a lower incentive wage. Considerable thought was given to this aspect of handling repairs since the plant inspectors who were responsible for passing on the quality of the production would also participate

in the incentive wage. However, any laxity on their part would soon be detected since the manufacture of the product was covered by rigid specifications and tests and the finished product was also inspected by the customer.

A complication in the handling of repairs was occasioned by customers returning for repair containers which they had damaged. This was handled by placing a distinctive colored tag on each such container and having the work performed on it charged to a special indirect labor number. The employees were also instructed to show the tag number on their time cards, and the labor cost was then manually tabulated by tag number. In this way not only could excessive charges to customers' containers be detected, but a record was available as to the actual cost of making such repairs.

Explaining Plan to Employees

As soon as the foregoing preparations were completed, the production department began its job of explaining the plan to the employees and getting them interested in it. The standards as set were broken down by departments and in some cases by individual operations. These were reviewed with the employees, department by department. The plan was explained to them in detail as to how it worked and their part in the over-all program and the benefits they would obtain. Special emphasis was placed on present output and the effect of increased production on their earnings. Since the general idea of the plan is simple and readily understood, it was not difficult to explain. However, selling it to the employees was an essential step. It was important that this was clearly understood, since fundamentally the success of the plan depends on the efforts of the employees as a whole.

Operation of the Plan

Reporting Production

Just prior to the day on which the plan was started, an inventory was taken of all the containers in process in each department. This was used as the basis for the inventory control which was installed. After the plan was in operation, each department, at the close of each shift, submitted a report (Exhibit 1) showing the number of containers received and the number delivered. A check was made on the accuracy of these reports to see if the total re-

DAILY PRODUCTION REPORT

Department_____ Shift_____ Date_____

Container Number	Received	Delivered
1		
2		
3		
4		
5		
6		
7		
Total		

EXHIBIT 1

ceipts by all departments, except the starting department (form preparation), agreed with the total deliveries to the next department.

This control or check on the production count was simple but very tight. As the departments were set up in sequence as to their place in the assembly line, the units completed by one had to agree with the units received by the next. In turn the units received in the shipping department had to agree with the units completed by the last department (packing). The shipping department's records were then tied in with the shipping orders. From these records, a book inventory control, by departments, of the containers in process throughout the plant was established and periodically checked. This manner of control minimized the need for subsequent checking or rechecking. All differences in production reports

were immediately taken up with the appropriate department supervisor for correction.

Computing Standard Hours

This production was then summarized on a "Standard Labor Hours Computation Sheet" (Exhibit 2). One form was prepared

STANDARD LABOR HOURS COMPUTATION SHEET

Container Number_____Date_____

Dept.	PRODUCTION			Total	Standard	Extension
	Shift #1	Shift #2	Shift #3			
11						
12						
13						
14						
15						
16						
17						
18						
Totals						

EXHIBIT 2

for each container type each day. Deliveries were entered by shifts in the production column, totaled, and multiplied by the standard hours allowed for that container in each department to arrive at total standard hours on each container each day.

The total standard hours were then carried over to a weekly record, "Weekly Standard Hours Recap" (Exhibit 3). It should be noted that these forms were designed so the incentive wage could be computed on a daily as well as a weekly basis.

WEEKLY STANDARD HOURS RECAP

Week Starting _____ Ending _____ Inclusive

Container Number	Standard Hours							Total
	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.	
1								
2								
3								
4								
5								
6								
7								
Total								

EXHIBIT 3

Computing Actual Hours

The existing account classification system, which was also used for the incentive plan, involved the use by the employees on their clock cards of a six-part number. The first two digits indicated the department in which the employee worked. The next two digits indicated the container number (if the operation involved direct labor), or a control number if indirect labor was involved. The last two digits indicated the specific type of direct or indirect labor operation performed. Actually a four-digit number could have been used by combining the last four digits, mentioned above, into two. However, this would not have allowed much room for future expansion. Moreover, the employees were already familiar with the six-digit series, so it was retained. Each department was instructed in the proper method of reporting employees' time, and

copies of the numbers applicable to that department were placed on the departmental bulletin board.

A combination daily time and clock card was used in the plant. Sufficient space was provided on the card to report five different jobs. Each employee reported his own labor showing the account or operation number, hours spent on each job, units completed, etc. His card was checked and approved by the department supervisor daily.

To understand fully the problem of counting actual hours, it might be well to consider that there were some seven hundred clock employees at this plant working three shifts. Totaling of the actual hours had to be completed within twenty-four hours, since the clock cards then were needed for processing by the payroll department.

The first step in this task was to sort the cards of the previous day by shifts and departments and enter them on the "Daily Time Card Check Sheet" (Exhibit 4). A separate form was used for each shift each day and became the control sheet for the clock cards issued. It showed the total number of clock cards placed in the racks for the employees, the number taken by the employees and punched in on the time clock, and the number of clock cards not punched because the employee was absent. After all the clock cards were accounted for and exceptions noted, they were checked for correctness of account numbers, extensions, signatures, etc. Incorrect clock cards were immediately taken to the production floor for correction. A point was made to have both the employee and the supervisor present when the correction was made. This procedure cut the clock card errors down from 47 per cent to 2 per cent within three months. The total hours by departments were then entered on Exhibit 4 to serve as a control.

The cards for each department were then sorted by direct and indirect account numbers, with a sub-sort by container numbers on the direct labor. The hours were then totaled and entered on a "Daily Labor Analysis" sheet (Exhibit 5). The total hours were checked for agreement with the total hours shown on the check sheet (Exhibit 4) for that particular block of cards. The totals of the direct labor hours were then transferred from labor analysis sheet, the "Weekly Direct Labor Hours Recap" (Exhibit 6).

DAILY TIME CARD CHECK SHEET

Shift_____ Date_____

Total cards issued for clock rack _____

Total cards not punched _____

Total cards punched _____

Department	Total Cards	Total Hours
11		
12		
13		
14		
15		
16		
17		
18		
79		
80		
81		
82		
83		
84		
Totals		

EXHIBIT 4

DAILY LABOR ANALYSIS

Shift_____ Date_____

Dept.	Direct Hours on Container Numbers								Indirect Hours	Total
	1	2	3	4	5	6	7			
11										
12										
13										
14										
15										
16										
17										
18										
79										
80										
81										
82										
83										
84										
Total										

EXHIBIT 5

Control of Cards and Hours Reported

Two controls were incorporated to safeguard against the loss of any cards and to verify the hours reported. The first of these was mentioned above and covered a record of all time cards issued. This made certain that all cards were included in the labor hour analysis. The second control utilized an existing record which listed all of the clock card employees in numerical order and showed

WEEKLY DIRECT LABOR HOURS RECAP

Week Starting _____ Ending _____ Inclusive

Date	Shift	Container Number 1	2	3	4	5	6	7		Total
	1									
	2									
	3									
	Totals									
	1									
	2									
	3									
	Totals									
	1									
	2									
	3									
	Totals									
	1									
	2									
	3									
	Totals									
	1									
	2									
	3									
	Totals									
	1									
	2									
	3									
	Totals									
	1									
	2									
	3									
	Totals									
TOTALS										

EXHIBIT 6

the number of hours worked each day. This record was provided with 31 columns to cover the attendance for one month. By changing it to show only fifteen days attendance, it was possible to post direct labor hours separately from indirect labor hours. The direct labor hours shown on this attendance record were then reconciled with the direct labor hours shown on Exhibit 6. At first some difficulty was encountered in getting these records to agree, but once the timekeeping department was properly trained in the processing of the clock cards, a very close tie-in was obtained.

Computing the Incentive Wage

With the above information, the calculation of the incentive wage to be added to employee earnings was a relatively simple matter. However, since the calculation was important, a special form, "Incentive Wage Calculation" (Exhibit 7), was designed to avoid errors and to establish an official record. Usually this calculation was completed by the beginning of the second working day of the following pay period, when the per cent of incentive wage to be paid was posted on the bulletin board.

INCENTIVE WAGE CALCULATION

For Week Ending _____

Standard Hours (from Exhibit 3)..... _____
Actual Hours (from Exhibit 6)..... _____
Divide standard hours by actual hours, multiply by 100 and subtract 100.00 to get percent of efficiency over standard _____
Percent of Incentive Wage (50% of efficiency over standard) _____

_____
Computed by

_____
Checked by

EXHIBIT 7

As mentioned before, the actual calculation of the payroll was set up on tabulating equipment. Accordingly, the adding of the incentive wage to the employees' earnings was handled by taking the punched cards showing the weekly gross earnings, exclusive of the incentive wage or the weekly overtime, and running them through a multiplier which added the incentive wage and punched a new

total. The weekly overtime was then computed to get the gross earnings for the pay period. It will be noted that computing the weekly overtime after adding the incentive wage failed to give the employees a figure on their total incentive earnings. It would have been very desirable to have shown this amount, but this could not be arranged without sacrificing the true weekly overtime figure required by government wage regulations.

In making the above calculation of incentive pay, learners had to be excluded. This was easy to do since they had a distinctive series of employee clock card numbers. The incentive wage for learners had to be computed manually and punched on a card which was then included in calculating their pay. This manual computation was made by recording daily the gross earnings of each learner. At the end of the week, the earnings were totaled and multiplied by their per cent of participation and also by the per cent of incentive wage being paid for that week. At the same time the record card on each learner, showing his per cent of participation, was kept up to date.

Reports to Management

An important feature of the incentive wage plan was the information which could be obtained to assist the management in increasing production and controlling costs. For this purpose, a "Daily Operation Report" (Exhibit 8) was designed. This could be prepared and be available approximately eight working hours after the day covered. This report is useful in establishing trends and gives a certain amount of detail on items requiring further attention. With this information, analyses could then be made giving more information on weak spots. For example, analyses could be prepared showing the per cent of incentive wage by departments, or by shifts or by operations, or even by individuals. Similarly, indirect labor could be analyzed by departments, by operations, and by shifts if necessary. With information of this kind the management was promptly advised of any falling off in production and could take corrective measures before the situation became serious. The special analyses pointed out the containers, the departments, and the shifts with the poorest performance records. The workers involved could then be given special development or training.

DAILY OPERATION REPORT

For_____

Container Number	Standard Hours	Actual Hours	Per Cent Incentive Wage
1			
2			
3			
4			
5			
6			
7			
Totals			
Indirect Hours			
Percent Indirect Labor			

EXHIBIT 8

Tie-in With Cost System

Incorporating the incentive wage plan into the cost accounting system did not present any difficult problem, although some changes in cost procedure were necessary. A standard cost system was being used. Separate labor and overhead accounts were maintained. These were charged with the actual cost and relieved monthly with the standard cost. Resulting variances were taken into profit and loss. As a result of the incentive wage plan, the standard costs had to be revised to incorporate the same standards as those used to compute earnings. These standards were established so they would include the estimated average incentive wage the employees would earn. The difference between this estimate

and the actual incentive wage earned by the employees would, of course, end up in the variance accounts.

For purposes of labor distribution, the amount paid as incentive wage was distributed over all the participating direct and indirect labor on a percentage basis. Thus it did not show up as a separate item, but rather became a part of the direct labor and the overhead.

Summary

In this particular case, the incentive wage plan worked very well. Production started to increase, being 8 per cent over the standard during the first week and soon reached better than 40 per cent above standard. In general this incentive wage plan has certain definite advantages over piecework plans. Principal of these is that it offers an inducement to all employees, both direct and indirect, to work as a team. Also it can be installed more rapidly and is somewhat more economical to operate. By placing emphasis on the over-all picture, there is less tendency for the employees to argue and take issue over individual rates.

There are certain points in the plan that require careful attention. The question of employee morale is paramount. The plan will not function successfully if individual employees start outdoing each other in making a minimum contribution to production. This danger can best be avoided by taking special effort to explain the plan to the employees at the start, and then by making special checks to weed out individuals not adding a fair contribution to the total production. Assistance along this line can also be obtained if some variation in base rates is made for the advancement of the better workers. Success of the plan also depends upon fairness in establishing and in changing standards. Arbitrary adjustments of standards to reduce incentive wage payments will sooner or later defeat the plan and deprive the employer as well as the employee of the gains accruing from increased production.

OPERATION OF A SALVAGE DIVISION

By Frank E. Lockrow, Central Cost Section, Erie Works, General Electric Co., Erie, Pa.

AS used in this article scrap refers to waste, such as, turnings, clippings, bar ends, pieces of sheets, or plates, dross from melting pots, and parts or devices scrapped because of defective workmanship, accident, or obsolescence. The article presents a summary of the salvage organization and activities in a plant employing approximately 10,000 people, in which the salvage division handled in one recent year 30,024 net tons of material, receiving therefrom an income of $1,092,523. Such income represents for the most part sales of scrap, both processed and unprocessed, and in turn reduces our product costs. A summary of the principal items follows:

	Net Tons	*Amount*
Iron and steel scrap:		
Sold to brokers	24,700	$ 380,000
Transferred to plant foundry	160	3,200
Aluminum scrap	225	17,800
Copper, refining and smelting grades	393	50,400
Miscellaneous non-ferrous metals	450	69,800
Babbitt metals	38	25,400
Copper and copper alloys to plant foundry	1,172	219,300
Cash sales to employees	856	4,100
Container handling (51,400 containers returned to vendors)	896	271,200
All other items	1,134	51,323
	30,024	$1,092,523

Included in cash sales to employees were such unusual items as salvaged lumber in the amount of $412, cut firewood $1,736, and sawdust $43.

Container handling is another unusual activity of the salvage division, which acts as the clearing house for the plant. Care is taken to return to vendors promptly, those containers held on a deposit basis. Excluding containers, 299 classes of material were sold by the Division. Some of these were sold as received; others resulted from processing material received into the most salable forms.

Organization of Salvage Division

The salvage division is supervised by an engineer thoroughly familiar with past and present products and in constant contact with engineering, purchasing, and sales divisions, as well as the manufacturing divisions of the plant. In addition to the clerical staff, the superintendent is assisted by a foreman (formerly from a manufacturing division) who is in continued contact with manufacturing operations in the plant. At the present time there are 65 employees engaged in operations of the salvage division; however, this number varies with general load changes in the plant.

Activities of Division

The division is, of course, equipped with all necessary facilities for handling, sorting, and processing of materials into the more desirable and higher priced classes. It is also equipped to reclaim many materials received in a mixed or contaminated condition, such as, tin from drossing, cutting, insulating, and lubricating oils and solvents. Principal special equipment consists of a crusher for breaking up long turnings into small pieces, a magnetic separator for removal of iron and steel from mixed chips and turnings, baling equipment for compressing scrap into bundles of convenient size, and melting pots for reclamation of tin and babbitt. We also possess oil reclaiming equipment consisting of tanks, pumps, electric-driven centrifuge (similar to a milk separator), and filters of fuller's earth and blotting paper with which water and dirt are removed from spent oils permitting their re-use in other divisions. Thus, in one year 21,000 pounds of tin were recovered and returned to the manufacturing divisions. Total volume of various oils reclaimed and returned was 10,000 gallons.

The salvage division performs other services for which it receives no direct compensation, such as the collection and distribution of re-usable wood barrels, boxes, cartons, etc. The division also dismantles apparatus and devices which, for one reason or another, are unsuitable for sale. In some cases, these costs exceed the value of the scrap recovered, but this work has an important though intangible value in preventing sale of such articles by unscrupulous dealers and consequent reflection upon the quality of the company's products in general.

Beyond these activities, the salvage division is continually study-

ing the possible use of by-products and the substitution and reclamation of materials. This is illustrated in the case of steel plates. The plant uses large quantities of steel plate in the fabrication of locomotive frames and floor plates, motor frames, etc. In one year, 332 tons of slag, accumulated in burning and welding processes, was sold as filler steel to blast furnaces. Another investigation revealed that scrap pieces of steel plate could be substituted for steel rail in malleable iron mixtures. This study was initiated by the salvage division and has resulted in substantially decreased use of steel rail, which is not always readily procurable.

An outstanding example of reclamation of material related to recovery of sludge from spray booths used in refrigerator cabinet manufacturing. By processing this recovered sludge, approximately 260,000 gallons of paint has been obtained. It was later found that primer sludge could be converted into an excellent sealing paste, and much of it was sold for that purpose. With the resumption of postwar manufacturing, there is reason to believe that these savings will be larger in the future.

The division has also been very active in conservation of materials, such as the economical use of welding rod. Throughout the plant, stub ends not exceeding a prescribed length must be returned in exchange for new rods. Since the unusable ends have amounted to as much as 40 tons in one year, strict control is well worth while.

Collection and Segregation of Scrap

So far, we have indicated some of the internal activities of the salvage division. We turn now to the activities in the manufacturing divisions over which the salvage division exercises supervision in full cooperation with each of these divisions. Working with and through the organizations of the manufacturing divisions, the salvage division supervises the collection, segregation, identification, and movement of scrap in and from manufacturing divisions to the salvage division.

An all-important requirement is segregation of scrap as generated according to its composition and form, that is, segregation of nickel, steel, chrome bearing steel, molybdenum steel, and high tungsten steel; aluminum of various grades, and segregation by turnings, bar ends, castings, etc. Each kind of scrap is placed in a clearly marked container. Extreme care is used to avoid mixtures

and contamination with refuse, to the extent that each container is inspected by the shop inspector and foreman before it its sent to the salvage division.

Scrap is moved to the salvage division daily and is usually sorted and prepared for sale on the following working day. Daily collection is helpful in avoiding contamination or mixture of scrap, and daily preparation for sale enables the salvage division to take advantage of the most favorable sales conditions. Daily handling also tends to reduce labor cost through better utilization of manpower in continuous operation. So successful is this control that in the production of castings of various copper alloys, scrap from previous castings of the same alloys is used by the foundry as received. Turnings from each of various alloys are pigged by a local company and added without change to the melt. Of all the non-ferrous metal turnings handled (including those sold and those pigged and used in the plant foundry) 82 per cent are uncontaminated and consist of one alloy or metal only. Much of the remaining 18 per cent has high copper value and is readily salable. This careful segregation of turnings is especially valuable in the case of production of certain alloys, which cannot be readily produced by ingot manufacturers from scrap ordinarily accumulated by them because of exacting limits of composition. It also conserves substantial quantities of ingot copper, pig tin, pig lead, slab zinc, and pure nickel.

In the case of alloyed steel turnings, there have been shipped without rejection as much as 1,250 tons of 11½ per cent to 13 per cent chrome bearing steel turnings, resulting in a saving of approximately 130 tons of chrome ore; also 1,250 tons of 3½ per cent nickel steel turnings, subject to acceptance upon assay, resulting in a recovery of approximately 36 tons of nickel.

Careful segregation of commercial molybdenum steels and high tungsten steels has also been profitable, since the price is dependent upon the contained percentages of molybdenum and tungsten. Expended high speed steel tools are first returned to a central tool division, where they are examined for possible re-use and spark tested. If scrapped, they are sent to the salvage division, which rechecks by spark test and sells directly to mills pending assay.

Silicon steel clippings are always carefully segregated from common or standard steel clippings. From these, the steel com-

panies can count on recovering 35 pounds of silicon per ton of metal, enabling them to make a substantial saving of ferro-silicon in their furnaces.

As to aluminum, there have been as many as 26 separate classifications covering composition and forms, such as sheet, bar, or cast. Mixtures of aluminum and stainless steel, resulting from machining operations, are especially to be avoided, if possible. Particular attention is given to this since certain elements are detrimental to melts containing these mixtures.

Financial Operation

Most of this article has dealt with the physical operations of the salvage division, extended into and in cooperation with the manufacturing divisions. The financial operation will now be very briefly indicated. The head of the salvage division is, of course, the plant's natural agent in the disposal of scrap. He is in constant communication with the dealers and brokers and has at his disposal all publications bearing upon market conditions and prices, and the services of the Institute of Scrap Iron and Steel and the National Association of Waste Material Dealers. He therefore determines the proper prices to be currently allowed the manufacturing divisions for scrap generated and for other goods of miscellaneous character not usable in the plant but having some sales value.

These allowances take into account the cost of handling and of cleaning, baling, or other processing of scrap. Allowances must permit the salvage division to sell competitively, and it is also desirable that they reflect the best possible return to the manufacturing division. These allowances, of course, reduce product costs.

Costs of Handling and Processing Scrap

There is nothing unusual in determining costs of handling and processing the various materials which pass through the division. Operators who handle and process materials are paid under a group incentive plan. As a practical measure, standards are established only for principal commodities, and incentive payments are based on the results of these operations. For the purpose of calculating costs, operators' labor corresponds to direct labor of a manufac-

turing center, and the overhead expense of the division is separately applied thereto.

The major sources of income have been enumerated earlier in this article. Certain services, mostly in the nature of reconditioning of shop supplies, are performed for other divisions at reasonable charges. Although the division attempts to operate currently on a non-profit basis, there arises at the end of the fiscal year a small surplus or deficit, representing the difference between prices allowed other divisions plus the cost of operation of the salvage division, and receipts from goods and services sold. Such surplus or deficit is then apportioned to the various manufacturing divisions and product lines.

Educational Work

This article would be incomplete without mention of the educational activities of the division. Manufacturing foremen, cost, planning, production, and wage-payment men visit the division regularly. Other interested employees are encouraged to make such visits and observe the kinds and condition of scrap received and the work necessary to prepare it for sale in the forms of greatest value. From time to time, articles dealing with salvage activities are presented in the plant paper, always with emphasis upon reduction of scrap caused by defective workmanship, careful segregation of scrap, and when possible, its generation in forms of greatest value requiring minimum handling and preparation for sale. Personal contact with all concerned in producing and handling scrap in the various divisions is frequent and effective.

Such a salvage organization as here described can and does make an important contribution to low-cost manufacturing.

COST RECORDS FOR THE HOME BUILDING INDUSTRY

By Howard A. Moore, Secretary-Treasurer,
Whitcomb and Keller, Inc.,
South Bend, Ind.

ALTHOUGH the building industry is one of the largest businesses in the United States today there has been very little written about the accounting technicalities of this industry. The forms, methods, and system that I am outlining in this treatise have been the development over the past fifteen or twenty years by myself and associates and have proven very successful and helpful in our operations.

Key Letters

The foundation of this entire system depends upon the code consisting of key letters and numbers. There are 22 letters as shown in Exhibit 1.

KEY LETTERS

A Service
1 Permit
2 Water
3 Electricity
4 Gas
5 Plans
6 Survey
7 Freight

B Excavation
1 Staking Off
2 Excavation
3 Back Filling
4 Tree Pulling

C Mason Work
1 Labor
2 Cement—Lime—Mortar—etc.
3 Sand
4 Cleanout door—Thimbles—etc.
5 Cement Block
6 Face Brick
7 Com. Brick
8 Cut Stone
9 Hollow Tile
10 Flue Lining
11 Fireplace Dampers
12 Fireplace Material
13 Foundation Bolts
14 Angle Irons
15 Wall Ties
16 Vent
17 Glass Blocks
18 Cellar Window
19 Coal Chute

D Concrete
1 Footings—Labor
2 Footings—Cement
3 Footings—Sand
4 Footings—Gravel
5 Footings—Reinforcing
6 Tiling & Tile
7 Form—Labor
8 Wall—Labor
9 Wall—Cement
10 Wall—Sand
11 Wall—Gravel
12 Wall—Reinforcing
13 Wall—Tile
14 Areaways

E Walks & Steps & Drive—Concrete
1 Labor
2 Cement
3 Sand
4 Gravel
5 Reinforcing

6 Expansion Strip
7 Cinder drives—Labor—Material

F Floors—Concrete
B1 Labor
B2 Cement
B3 Sand
B4 Gravel
B5 Reinforcing
B6 Cinders
P1 Labor
P2 Cement
P3 Sand
P4 Gravel
P5 Reinforcing
P6 Cinders
S1 Labor
S2 Cement
S3 Sand
S4 Gravel
S5 Reinforcing
S6 Cinders

G Plaster
C Contract
1 Labor
2 Lath
3 Cornerite
4 Sand
5 Lime
6 Plaster
7 Corner Beads
8 Studding Braces

H Insulation
1 Labor
2 Rockwool
3 Vermiculite
4 Kwiltex
5 Waterproofing

J Floor
C Contract
1 A-1 Oak
2 Select Oak
3 Clear Oak
4 Blocks
5 Plywood
6 Stair Treads
7 Sanding
8 Finishing
9 Traffic Paper
10 Prefinished 13/16" Oak

K Garage
1 Cement Floor Labor
2 Cement & Rickmorter
3 Sand
4 Gravel
5 Blocks
6 Bricks
7 Carpenter Labor
8 Lumber
9 Hardware
10 Painting
11 Wiring
12 Doors
13 Reinforcing
14 Bolts
15 Roof

L Lumber & Millwork
1 Lumber
2 Millwork
3 Insulation Board
4 Steel Casements
5 Roofing material
6 Felt
7 Mantel
8 Kitchen Cupboards
9 Screens
10 Storm Sash
11 Storm Doors

M Carpentry
C Contract
1 Rough
2 Finish
3 Roofing

N Hardware
1 Rough
2 Finish
3 Weights & Cords
4 Girder & Steel Post
5 Medicine Cabinet
6 Mail Box
7 Package Receiver
8 Caulking Compound
9 House numbers
10 Ornamental Iron
11 Bath Sets
12 Metal Areaways

O Sheet Metal
C Contract
1 Labor
2 Material
3 Spouting
4 Tin Roof
5 Clothes Chute
6 Termite Shields
F Fire Doors

P Plumbing
C Contract

1 Rough
2 Finish
3 Cesspool
4 Softener
5 Downspout & Tiling
7 Open Waste
8 Coils—Furnace
9 Well Drilling
10 Electrical

Q Furnace
1 Labor & Material
2 Furnace
3 Registers
4 Electrical
5 Tank Fuel Oil
6 Setting Oil Burner
7 Gas Connection
8 Furnace Cleaning
9 Boiler & Radiator Repair
10 Smoke Pipe

R Painting
C Contract
1 Exterior—Labor
2 Exterior—Material
3 Interior—Labor
4 Interior—Material
5 Wall paper—Labor
6 Wall paper—Material
7 Glazing
8 Basement

S Electric
1 Wiring
2 Fixtures
3 Specialties

T Teaming & Grading
1 Hauling
2 Grading
3 Cleaning
4 Shrubbery
5 Mowing
6 Sodding

U Fuel
1 Coal
2 Oil
3 Gas
4 Ash Hauling

V Prefab. House
1 National
2 Gunnison

W Linoleum & Shades
1 Shades
2 Linoleum
3 Linowal
4 Venetian Blinds

EXHIBIT 1

These letters follow in a natural sequence; that is, as the house progresses we step over to the next letter. Under each letter there are numbers which represent the particular item of labor or material. A1 is Building Permit. That is the first cost on the job. B is Excavation, C Mason Work, etc.

The letter C following a particular code letter would indicate that this job was subcontracted. For example, GC would mean that the plastering work was sublet and usually the entire cost of the plastering would be one item (including both labor and material).

As I have already stated the key letters follow in a natural order. A close scrutiny of the list may show a slight variance from this because the system was developed over a long period of time, and it was occasionally necessary to add a letter or number which might be out of order. Because we frequently refer to closed records, we desired to retain the key letter for the same type of work throughout. An addition to the list during recent years is V which represents the factory cost of a prefabricated house.

EXHIBIT 2—COST SHEET

Cost Sheet

An examination of the cost sheet as shown in Exhibit 2 will immediately show that the key letter is carried at the top of the

BUILDINGS IN PROGRESS

NO. STREET

LOT NO. ADDITION

DATE	FOLIO	ITEM	KEY	OLD BALANCE	DEBIT	CREDIT	NEW BALANCE

EXHIBIT 3—LEDGER CARD

sheet. Below each letter there are two columns. The key number is carried in the first column, the charge in the second.

Above the first horizontal line the estimated cost of the different items is entered in red. Below the line the charges are posted from the ledger card (Exhibit 3). After each posting the clerk takes a sub-total in pencil. A total of the totals is written in the extreme right-hand column, which amount must agree with the ledger card balance.

Architect's Estimate Sheet

When the house is still a blue print the architect will estimate the cost from past experience, from subcontractors' bids, and from records on similar houses. This he will enter on a form as shown in Exhibit 4.

SOUTH BEND BUILDERS, INC.
230 West Jefferson Blvd.
South Bend, Indiana

Date:
In Re:

Service	$
Freight	
Excavation, backfill and grading	
Concrete Walls	
Mason Work and Chimney	
Basement sash, Glass blocks, & Foundation bolts	
Walks and Steps	
Driveway	
Cement Floors	
Plaster or Dry Finish	
Insulation	
Wood Floors	
Garage	
Lumber and Millwork	
Kitchen Cabinets	
Roofing and Felt	
Carpenter	
Hardware and Basement Columns	
Sheetmetal	
Plumbing	
Heating	
Painting	
Electric Work	
Landscaping	
Fuel	
Screens, storm doors and storm sash	
Linoleum	

EXHIBIT 4—ARCHITECT'S ESTIMATE SHEET

Operation of System

Purchase orders are a vital part of the effective operation of this cost system. Every item of material that is purchased or any subcontract that is let should have a written order. At the time of entering the order the clerk should ascertain to what use the material will be put and if possible secure the key letter at that time. A check of the purchase orders which have not finally been entered as charges will show at any time what work has been ordered and not yet billed and the amount of the outstanding indebtedness for which the company has not been billed.

Upon receiving the invoice the purchase order copy is delivered to the accounting department together with the bill properly audited, showing a key letter. From this information a charge is entered on the building card (Exhibit 3). The bookkeeper should have definite instruction to post nothing without a key letter.

A separate ledger card is carried for each house. All items which can be charged to a particular job are charged to that address. In cases where a debit covers several houses in one locality and cannot be charged to a particular house, we open a ledger card for that addition and when all jobs have been completed make a distribution to each home.

From the ledger card the cost clerk will post to the cost sheet. The clerk must be ever-watchful of large differences between estimate and actual which will usually mean a charge to the wrong property. By immediately calling such a matter to the attention of the architect, often serious mistakes can be averted. Attention should also be given to see that the job is progressing across the sheet. If an item under heating is entered when the concrete work is in progress, something must be wrong and can immediately be corrected.

When a key letter is not on a purchase order, the bookkeeper should not attempt to substitute such letter. A barrel of cement can carry any one of the following letters: C_2, D_2, D_9, D_{14}, E_2, FB_2, FP_2, FS_2, K_2. Only the man on the job will know the purpose for which it is to be used.

The architect must continually watch the cost sheets, attempting to correct any mistakes and adjust any flaws in his estimating. When the house has finally been completed and all charges made,

a comparison of estimated cost with actual cost will assist in more accurately estimating in the future.

With the information as shown on the architect's estimate sheet, the accountant can add those other costs which do not affect the construction. These items are found on the "detail of profit and loss sheet" (Exhibit 5). With this total estimated cost the management can determine upon a sales price. After the entire transaction has been consummated, the detail of profit and loss sheet can be accurately completed, and the management will then know whether

Address			
Lot	Addition		
Date Sold	Purchaser	Salesman	
Sales Price			
Less: Allowance, Discount, Credit, etc.			_____
NET			
Cost of Lot			
Cost of House		_____	
NET COST			
Temporary Financing Fee & Interest			
F. H. A. Loan Expenses			
Abstract			
Hazard Insurance			
Commission on Sale			
Payroll Tax			
Gross Income Tax			
Revenue Stamps			
Direct Expenses		_____	
Overhead:			
Loan Department			
Sales Department			
Building Department		_____	
Indirect Expense		_____	
TOTAL COST			_____
NET PROFIT OR LOSS*			═══

Building Department Estimated Cost
Actual Cost
House started——————Completed——————
% of Direct & Indirect expenses to Net Cost of House———
% of Direct & Indirect expenses to Selling Price* ———

*Our estimated value if unsold

EXHIBIT 5—DETAIL OF PROFIT AND LOSS

there has been a gain or loss, the length of time to build the house, time necessary for sale, and other pertinent information necessary for the successful operation of a building construction concern.

OUR OPEN FORUM

A Punched-Card Payroll System on the Exception Principle

Editor, N. A. C. A. Bulletin:

The article by Troy A. Chapin, Jr., in the *N. A. C. A. Bulletin* of October 1, 1945, is excellent. Having had experience in developing, installing, and supervising punched-card accounting systems, I hasten to concur in his sound advice. Following Mr. Chapin's counsel will save many disappointments and tend to develop a good installation.

As it was of unusual interest to the writer, we are passing along a unique punched-card payroll system of recent vintage. Although novel, it deserves serious consideration as it is producing excellent results in a most economical manner. This payroll application works on an *exception* basis in developing gross earnings.

From position master cards and employees master name cards, a skeletonized weekly work schedule is listed by position, by employee. The foreman indicates on skeletonized schedule the turn and day scheduled. From the work schedule, a forecasted position payroll is prepared through use of prepunched and gang-punched cards; also weekly clock cards are prepared showing badge number, interpreted name of employee, and scheduled turns.

Exceptions from the work schedule are reported currently by the foreman and audited with clock cards. The forecasted position payroll is currently corrected and tabulating cards punched for the exceptions.

At the close of the pay period, actual hours worked and premium hours are mark sensed into the clock cards and balanced with the forecasted payroll as adjusted by the exceptions.

J. L. Brownlee,
Birmingham Chapter.

Postwar Pricing

Editor, N. A. C. A. Bulletin:

I have read with considerable interest Harry E. Howell's excellent article in the November 15, 1945 issue of the *N. A. C. A. Bulletin* on the subject of "Postwar Pricing and Cost Accounting." While Mr. Howell's discussion of the possibilities of the use of cost accounting for pricing purposes relates more properly to the manufacturing industries, he will find that, from force of circumstances, the coal mining accountant has become adept in the advance determination of production costs under varying operating conditions. In his case, however, the purpose usually was not to set prices but rather to determine the rate of production that would permit his company to survive in the face of prevailing sales prices which, because of overproduction and competitive fuels, were all too often below the cost of production of the industry as a whole.

While a more favorable condition exists during the present abnormal

period, if Mr. Howell desires a classical example of the causes and effects of the various unsound trade practices touched upon in his article, he would do well to study the history of the anthracite coal industry, which has experienced all of the "price restraints" mentioned and, until conditions were automatically changed by wartime demands, was using the "time-honored remedy" of curtailing production under a state production control plan.

CLARENCE N. JENKINS,
Scranton Chapter.

ASSOCIATION NEWS

Conference Committees Appointed

At its meeting on December 7, the National Board of Directors re-affirmed its previous decision to hold the 1946 Annual Cost Conference in New York on June 17 to 19, 1946. At the same time President Klein announced the appointment of the following Conference Committee:

GEORGE L. NOHE, Brooklyn, *Chairman*
ERNEST A. DAVIS, Greenwich
MARSHALL GRANGER, New York
GEORGE H. HALLETT, Newark
MILTON HUDDERS, Brooklyn
CLARENCE G. THEDERS, Boston
CHARLES W. TUCKER, New York

President Klein also announced the appointment of the following members to the Conference Technical Program Committee:

H. G. CROCKETT, New York, *Chairman*
EDWARD J. HANLEY, Pittsburgh
STUART D. MACLAREN, Worcester
JAMES J. HASTINGS, Newark
WILLIAM H. FRANKLIN, Peoria

Both of these Committees have held meetings and reported on the initial progress made in planning for the Conference and the technical sessions.

Per Cent Club Records

Bernie Cauchon, Vice President of the Providence Chapter and Editor of the Providence Chapter News Letter feels that some recognition is due the members of chapters which have established outstanding records for continuous attendance at meetings. The Providence Chapter established a 100% Club for the first time this year. According to Mr. Cauchon in the Providence News Letter for November—

"It is unfortunate we did not get started on this years ago,

as we feel confident we would have % clubs similar to the following chapters, which we congratulate most sincerely:

Peoria Chapter has a.....400% Club
Rockford Chapter has a.....400% Club
Tri-Cities Chapter has a.....600% Club
Lehigh Valley Chapter has a.....600% Club
Cincinnati Chapter has a.....700% Club
Atlanta Chapter has a.....700% Club
Lancaster Chapter has a.....1000% Club
Washington Chapter has a.....1000% Club

"Grand Rapids Chapter has 3 members in their 1000% Club and Toledo has 7 in their 700% Club while Louisville Chapter has 17 members in their 600%.

"A tree may grow in Brooklyn but we here in poor little R. I. send an orchid to Harry A. Grube of the Brooklyn Chapter for attaining the best yet—1200%."

CHAPTER MEETINGS

January, 1946

Chapter *Meeting Place*	*Date*	*Subject and Speaker*
Akron Portage Hotel	22	*Inventory Problems* Howard C. Knapp, Stevenson, Jordan & Harrison, Inc.
Albany O'Connor's Restaurant	15	*Mechanics of Standard Costs* Edward H. Bill, Jr., Staff Assistant to Vice President in charge of Production and Industrial Relations, Cluett Peabody & Co.
Atlanta Atlanta Biltmore Hotel	15	*Wage Incentive Plans—Their Relationship to Production Costs and Over-All Costs* Jack C. Hardy, Chief Cost Engineer, Le Tourneau Co. of Georgia.
Baltimore Emerson Hotel	15	*Re-establishing Budgetary Control* R. P. Marple, Assistant Secretary in charge of Technical Service, National Association of Cost Accountants.
Binghamton Hotel Frederick	17	*Relationship of Industrial Engineering to Accounting in a Manufacturing Organization.* W. L. Duncan, Industrial Engineer, Ansco.
Birmingham Hotel Thomas Jefferson	15	*Cost Control—Industrial Engineering* Herbert Stockham, President, Stockham Pipe Fittings Co.
Boston Hotel Vendome	23	*Control of Direct and Indirect Costs* Charles H. Gleason, Manager of Cost Control and Analysis, Sylvania Electric Products, Inc.

Chapter Meeting Place	*Date*	*Subject and Speaker*
Bridgeport Stratfield Hotel	17	*Taxation for 1945-1946* William F. Connelly, Tax Assessor, City of Bridgeport, and Assistant Professor of Accounting, New York University School of Finance.
Brooklyn Central Branch, Y. M. C. A.	16	*Types of Industries to Which Standard Costs Are Applicable and Why* Arno Kassander, Lybrand, Ross Bros. & Montgomery.
Buffalo Church of the Covenant	24	*Current Trends in Wages and Labor Relations and Their Effect on Cost Accounting* Dr. Lloyd D. Reynolds, Associate Professor of Economics and Associate Director of Management Labor Center, Yale University.
Calumet Hotel Gary	15	*Problems in the Development of a Small Business* Stanley A. Pressler, Director, War Training Program, School of Business, Indiana University.
Cedar Rapids Hotel Roosevelt	23	*The Value of Cost Accounting in Financial Appraisal of Business Ventures* L. L. Ellis, Account Executive, Booz, Allen & Hamilton.
Chattahoochee Valley Cherokee Lodge	17	*Accounting by Causes vs. Accounting by Accountants for Management Assistance* Honorable Walter A. Richards, President, Tom Huston Peanut Co.
Chattanooga Hotel Patten	17	*Federal Corporate Taxes* Albert W. Taber, Attorney, Taber, Chambliss, Swafford & Claunch.
Chicago The Furniture Club of America	24	*Budgets for Cost Control* David B. Caminez, Assistant Comptroller, Hyatt Bearings Div., General Motors Corp.
Cincinnati Hotel Gibson	17	*Looking Ahead in Property Accounting* William Y. Armstrong, District Manager, The American Appraisal Co.
Cleveland The Carter Hotel	17	*Tax Problems of Industry—Present and Future* G. W. Daverio, Tax Attorney, Firestone Tire & Rubber Co.
Columbus Fort Hayes Hotel	14	*Costs for Different Purposes* E. J. Hanley, Treasurer, Allegheny Ludlum Steel Corp.
Cuba Habana Yacht Club	23	*Interesting Facts Concerning Life Insurance* Joaquin Villodas Bird, Partner, Riera, Vidal and Villodas Bird.
Dallas Melrose Hotel	18	*Depreciation, Depletion, and Amortization* E. Clyde Seymour, Comptroller, Treasurer, and Director, Magnolia Petroleum Co.
Dayton Van Cleve Hotel	15	*Internal Auditing* Carroll H. Blanchar, Auditor, United Air Lines.

Chapter Meeting Place	Date	Subject and Speaker
Decatur Decatur Club	17	*Our National Economy—Income and Cost Statement. Seven Years, 1939-1945.* F. Eakin, Vice President, A. E. Staley Mfg. Co.
Denver Cosmopolitan Hotel	15	*Application of Machine Accounting in Business* Max M. Shaver, Regional Manager, Under-Wood Elliott Fisher Co.
Des Moines Commodore Hotel	17	*Recent Changes in the Individual Income Tax Law* O. L. Dykstra, Partner, Allen, Dykstra, & Swift.
Detroit Detroit-Leland Hotel	17	*Job Evaluation and Wage Incentives* Dr. Charles Reitell, Stevenson, Jordan & Harrison, Inc.
Erie Moose Club	21	*Inventory Problems* Howard C. Knapp, Stevenson, Jordan & Harrison, Inc.
Evansville McCurdy Hotel	17	*Normal Capacity and Its Uses* L. W. Downie, President, Kelsey Wheel Co., Ltd.
Fort Wayne Chamber of Commerce	15	*Costs for Different Purposes* E. J. Hanley, Secretary and Treasurer, Allegheny Ludlum Steel Corp.
Grand Rapids Rowe Hotel	15	*Standards, Costs, and Budgets* Benedict M. Sayre, Senior Partner, Benedict M. Sayre & Co.
Greenwich Hugo's Piccadily Restaurant	15	*Current Trends in Income Tax Examinations and Law* George J. Covalt, Price, Waterhouse & Co., and Paul D. Seghers, Certified Public Accountant.
Hagerstown Hotel Alexander	17	*Current Trends in Federal Corporation Taxation* Mark E. Richardson, Resident Partner, Lybrand, Ross Bros. & Montgomery.
Hampton Roads Albany Restaurant	18	*The Use and Control of Shipbuilding Costs* William E. Blewett, Jr., Vice President and Production Manager, Newport News Shipbuilding & Drydock Co.
Harrisburg Penn-Harris Hotel	8	*Budgetary Control* Arthur T. Cameron, Professor, Wharton School of Finance and Commerce, University of Pennsylvania.
Hartford Farmington County Club, Farmington	15	*Costs and Profit Structure* Dr. Charles Reitell, Stevenson, Jordan & Harrison, Inc.
Houston Y. M. C. A.	16	*Reducing Costs Through Use of Trained Personnel* E. L. Williams, Director, Industrial Extension, A. & M. College of Texas.

Chapter Meeting Place	*Date*	*Subject and Speaker*
Indianapolis Lincoln Hotel	16	*Normal Capacity and Its Uses* L. W. Downie, President and General Manager, Kelsey Wheel Co., Ltd.
Jackson Heidelberg Hotel	17	*Accounting for Fixed Assets* Ernest W. Andrews, State Auditor, Southern Bell Telephone & Telegraph for the State of Mississippi.
Jamestown Hotel Jamestown	22	*Business Tax Problems* Samuel J. Lasser, Resident Manager, Seidman & Seidman.
Kansas City	21	*Visual Aid In Training Industry* Larry Sherwood, Vice President in charge of Production, Calvin Co.
Lancaster Hotel Brunswick	18	*Making the Office Pay a Profit* P. A. Lawrence, Head of Methods Research Div., Burroughs Adding Machine Co.
Lehigh Valley Hotel Easton	18	*Federal Taxes* Paul D. Seghers, Certified Public Accountant.
Los Angeles Scully's Cafe	22	*Los Angeles in Transition—An Appraisal of the Economic Change and the Effect on Industrial Labor Costs* Dwight Palmer, Industrial Relations Consultant.
Louisville Brown Hotel	15	*Looking Ahead in Property Accounting* W. Y. Armstrong, District Manager, The American Appraisal Co.
Maine Lafayette Hotel, Portland	18	*Relief Provisions of the Current Revenue Act* Norman D. Cann, Deputy Commissioner, Office of Internal Revenue.
Memphis Hotel Gayoso	16	*Income Taxes—Personal and Corporation* Lawrence K. Arthur, Assistant Vice President, Federal Reserve Bank.
Milwaukee Milwaukee Athletic Club	14	*Control Accounting for Labor Costs* William H. Franklin, Comptroller, Caterpillar Tractor Co.
Minneapolis Curtis Hotel	23	*Panel Discussion: Control of Manufacturing Expenses and Departmental Burden Rates* Chairman: D. C. Steinhelber, Auditor, Minneapolis-Moline Power Implement Co.
Muskegon Occidental Hotel	21	*Budgetary Control* Gilbert A. Peters, Treasurer, Kaydon Engineering Corp.
Nashville Andrew Jackson Hotel	8	*Production Control* M. E. Mengel, Director of Industrial Div., Burroughs Adding Machine Co.
Newark Hotel Robert Treat	24	*Wage and Salary Administration Policies and Programs* George E. Meyers, Manager, Special Service Dept., Ernst & Ernst.
New Hampshire Carpenter Hotel, Manchester	15	*Forum Meeting: Internal Control* Chairman: Thomas H. Buckley, Comptroller, Public Service Co. of New Hampshire.

Chapter Meeting Place	*Date*	*Subject and Speaker*
New Haven Hotel Garde	22	*Taxes* Thomas N. Tarleau, Partner, Willkie, Owen, Otis, Farr & Gallagher.
New Orleans Jung Hotel	16	*The Accountant in a Selling Economy* T. E. Clemons, Branch Manager, International Business Machines Corp.
New York New Yorker	28	*What Postwar Foreign Trade Might Mean to Us* William S. Swingle, Vice President, National Foreign Trade Council, Inc.
Peoria Jefferson Hotel	16	*Federal Income Taxes* Troy G. Thurston, Partner, Geo. S. Olive & Co.
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Springfield Hotel Sheraton	16	*Work Simplification* Herbert F. Goodwin, Associate Professor, Massachusetts Institute of Technology.
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CHAPTER RATINGS

For Six Months Ending November 30, 1945

	Applications, Reinstatements and Transfers	Member Attendance	Publications	Publicity	News Letters	Advance Organization of Program and Final Program	Employment	Board Meetings	Meeting Notices and Reports	Bulk Mailing	Financial Budget and Report	Special Activities	Total
1. Providence	1089	520	215	105	120	200	25	360	60	50	75	170	2989
2. Birmingham	1042	504	294	83	120	200	25	300	60	50	75	120	2873
3. Dallas	1125	328	240	92	120	200	25	328	60	50	75	120	2763
4. Atlanta	1110	321	90	101	120	200	25	356	60	40	75	125	2633
5. Jamestown	984	364	98	95	120	200	25	300	60	50	75	185	2556
6. Hampton Roads	1029	359	98	88	120	200	19	270	57	40	75	120	2475
7. Memphis	991	404	115	39	120	200	25	290	55	50	75	90	2454
8. Des Moines	1025	474	105	15	80	175	24	270	52	40	75	50	2385
9. Los Angeles	833	366	150	82	120	175	24	300	60	50	75	90	2325
10. Wabash Valley	922	330	90	66	120	200	9	330	60	50	75	70	2322
11. Scranton	843	306	108	82	120	200	25	330	60	50	75	120	2319
12. Philadelphia	726	448	85	96	120	200	25	360	50	50	75	40	2275
13. Williamsport	955	291	..	87	120	200	24	268	55	50	75	125	2250
14. Milwaukee	603	334	225	88	120	175	25	358	60	50	75	115	2228
15. New Hampshire	650	454	..	84	120	200	20	330	60	50	75	180	2223
16. Worcester	382	321	258	99	100	200	25	300	60	50	75	315	2185
17. Utica	854	384	..	96	120	200	18	314	52	50	75	20	2183
18. Muskegon	1004	462	..	37	..	200	15	280	24	40	75	45	2182
19. Minneapolis	571	548	84	83	120	200	25	270	60	50	75	70	2156
20. New Orleans	609	384	168	100	120	175	25	338	55	40	75	40	2129
21. Erie	516	301	90	105	120	200	25	360	60	30	75	245	2127
22. New Haven	554	375	234	78	120	200	25	300	60	40	75	50	2111
23. Toledo	531	308	162	85	120	200	25	360	60	50	75	130	2106
24. Akron	616	275	188	70	120	200	24	358	60	50	75	20	2056
25. Columbus	738	308	10	87	120	175	24	294	60	40	75	115	2046
26. Chicago	449	441	165	105	120	200	25	299	60	50	75	50	2039
27. Baltimore	521	328	130	79	100	200	25	330	48	50	75	130	2016
28. Newark	503	524	75	100	120	200	25	270	60	40	75	20	2012
29. Indianapolis	564	245	135	63	120	200	25	360	52	50	75	150	2009
30. Fort Wayne	652	289	66	79	120	200	25	330	48	50	75	65	1999
31. Peoria	442	317	75	101	120	200	25	330	60	40	75	210	1995
32. Syracuse	733	305	..	64	80	200	25	353	60	40	75	40	1975
33. Houston	525	307	125	96	120	200	25	330	60	40	75	70	1973
34. Brooklyn	502	340	135	98	120	200	25	327	60	40	75	45	1967
34. Cleveland	345	522	..	81	120	175	25	359	60	50	75	155	1967
34. St. Louis	357	456	160	100	120	200	25	299	60	50	75	65	1967
37. New York	401	385	160	91	120	200	25	360	60	50	75	20	1947
38. Maine	700	308	..	85	120	200	16	257	60	30	75	90	1941
39. Pittsburgh	396	336	210	93	80	200	25	356	60	50	75	50	1931
40. South Bend	525	400	98	66	120	200	24	300	52	30	75	20	1910
41. Bridgeport	323	298	165	101	120	200	25	309	60	50	75	180	1906
42. Grand Rapids	479	348	84	39	120	200	25	328	60	30	75	115	1903
43. Saginaw Valley	646	330	98	85	100	200	24	224	60	40	75	20	1902
44. Nashville	280	440	285	45	80	200	24	356	42	30	75	20	1877
44. Rochester	373	339	65	105	120	200	25	270	60	50	75	195	1877

	Applications, Reinstatements and Transfers	Member Attendance	Publications	Publicity	News Letters	Advance Organization of Program and Final Program	Employment	Board Meetings	Meeting Notices and Reports	Bulk Mailing	Financial Budget and Report	Special Activities	Total
46. Decatur	622	284	78	63	120	200	24	252	60	40	75	20	1838
47. Richmond	513	512	113	18	60	175	10	244	50	40	75	20	1830
48. Dayton	286	310	210	105	100	200	25	330	48	50	75	70	1809
49. Boston	373	329	10	105	120	200	25	360	60	50	75	100	1807
50. Chattahoochee Valley	975	546	..	36	20	100	10	85	24	10	..	..	1806
50. Springfield	316	319	174	101	120	200	25	296	60	50	75	70	1806
52. Hartford	363	321	85	105	120	200	25	300	60	50	75	70	1774
53. Lancaster	293	300	60	100	120	200	25	360	60	50	75	130	1773
54. Denver	335	336	104	87	120	200	25	300	60	50	75	65	1757
55. Washington	563	312	..	75	120	200	14	266	48	50	75	20	1743
56. Calumet	551	350	..	48	120	200	19	238	60	40	75	..	1701
57. Greenwich	450	305	..	82	100	200	25	355	48	10	75	50	1700
58. Albany	420	353	..	97	120	200	12	280	60	50	50	50	1692
59. San Francisco	375	264	70	85	120	200	25	266	60	50	75	100	1690
60. Kansas City	368	278	65	65	120	200	19	328	60	30	75	60	1688
60. Tri-Cities	275	279	168	96	120	200	25	330	60	40	75	20	1688
62. Rockford	290	398	..	46	100	200	25	312	60	40	75	120	1666
63. Chattanooga	330	338	156	56	120	200	25	238	60	50	75	..	1648
64. Youngstown	323	216	132	78	120	175	25	298	60	50	75	90	1642
65. Jackson	509	240	..	49	80	200	22	306	54	40	75	45	1620
66. Tulsa	577	260	..	25	40	200	18	335	48	40	75	..	1618
67. Cincinnati	372	285	162	44	60	200	25	283	60	50	75	..	1616
68. Lehigh Valley	250	316	10	100	120	200	23	328	55	30	75	100	1607
69. Detroit	258	328	135	55	120	175	25	300	60	50	75	..	1581
70. Reading	165	289	156	82	120	175	24	300	60	30	75	70	1546
71. Harrisburg	280	349	..	69	100	200	25	294	60	30	75	60	1542
72. Wichita	140	256	168	67	100	200	25	354	55	50	75	40	1530
73. York	88	299	60	101	120	200	25	325	48	50	75	120	1511
74. Louisville	431	356	72	31	..	200	19	150	60	30	70	..	1419
75. Hagerstown	117	295	..	79	120	200	25	262	60	40	75	95	1368
76. Buffalo	141	254	70	90	120	175	24	300	60	50	75	..	1359
77. Portland	216	278	..	33	20	200	15	345	60	30	70	50	1317
78. Cuba	111	142	90	87	120	100	22	360	60	40	75	..	1294
79. Binghamton	162	230	..	51	115	200	14	260	52	30	75	90	1279
80. Evansville	389	268	..	30	100	175	5	221	35	30	25	..	1278
81. Cedar Rapids	280	269	..	66	60	200	24	260	48	30	25	..	1262
82. Hawaii	..	..	..	18	60	..	..	105	36	..	25	..	244
83. Fort Worth	..	109	..	..	..	..	..	..	20	..	..	..	129

N. A. C. A. BULLETIN

Vol. XXVII, No. 9 January 1, 1946

IN TWO SECTIONS

Section II

RESEARCH SERIES

No. 6

Accounting Problems Arising From Tax Amortization of Emergency Facilities

EDITORIAL DEPARTMENT NOTE

This report has been prepared by the National Headquarters research staff on the basis of a limited number of case studies, a selective questionnaire survey, and interviews. It has been in preparation ever since the issue of the Presidential Proclamation of September 29, 1945, declaring an end to the emergency period for purposes of the amortization provisions of the Revenue Code.

With the appointment of the Committee on Research, activities of this kind came under the general surveillance of that Committee. One of its earliest actions was to request that the present survey be expedited in order that its results might be available for use in connection with year-end closings. This has been done under the guidance of the Chairman of the Committee. The results are presented herewith.

Three short cases are appended to the general statement. They represent typical treatments of typical situations, and thus furnish a basis for judging the realistic character of the report.

T. H. SANDERS,
Chairman, Committee on Research

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ACCOUNTING PROBLEMS ARISING FROM TAX AMORTIZATION OF EMERGENCY FACILITIES

Purpose of Report

EARLY in the emergency, Section 124 was added to the Internal Revenue Code providing that the cost of so-called "emergency facilities" acquired under certificates of necessity could be amortized on a 60-month basis for tax purposes in lieu of regular depreciation. This provision admittedly was enacted by Congress as an inducement to industry to expand production facilities beyond their normal requirements to take care of, first, defense needs, and then war needs. Approximately seven billions of such facilities were acquired. The evidence indicates that most of the companies concerned elected to take the amortization for tax purposes and on the basis of the special survey reported in N. A. C. A. Research Series No. 3 issued May 1, 1943, it appears that most of these companies also recorded the amortization on their books.

Section 124 also makes certain additional provisions affecting the owners of emergency facilities which are applicable upon the issuance either of non-necessity certificates or of a Presidential Proclamation declaring the emergency, with respect to such facilities, to be terminated. They were designed to enable the taxpayer, at his option, to obtain the benefits of a full amortization for tax purposes of the cost of the facilities within the emergency period where its duration was less than 60 months. These tax provisions are:

1. Taxpayers who elected to take amortization on a 60-month basis can revise their amortization deductions on the basis of the shorter period and recompute their taxes accordingly.
2. Taxpayers who elected to take amortization on a 60-month basis can change to depreciation for future periods, based on the unamortized cost at the date of termination of the emergency period.
3. Taxpayers who did not elect originally to take amortization in lieu of depreciation may make such election retroactively as of the termination date and substitute for the depreciation taken amortization on the basis of the actual number of months of the emergency period, recomputing their taxes accordingly.

The law provides that a taxpayer who wishes to avail himself of one of the above provisions must have communicated his election to the Commissioner of Internal Revenue within three months of the termination of the emergency period, whether by issuance of non-necessity certificates or Presidential Proclamation. In the absence of such election, the taxpayer will be bound by his earlier election, and where he had elected originally to amortize the cost on a 60-month basis he will continue the amortization on that basis.

The Presidential Proclamation declaring the emergency period to be ended for purposes of Section 124 was issued on September 29, 1945, and January 1, 1946, was the last date for filing notice of intent with the Commissioner.

While complete information is not available as to the extent to which companies reflected tax amortization in their accounts it appears from the survey reported in Research Series No. 3 referred to above, and from a limited survey made in connection with this report, that the practice of conforming the accounts to the tax returns has been widely adopted with respect to amortization.

In those cases where the amortization was taken for book purposes as well as for tax purposes, the continued use of the emergency facilities in peacetime production poses some significant questions of industrial accounting policy which call for immediate consideration. It is the purpose of this report to define these questions and to review various alternative procedures along with the advantages and disadvantages of each. While no specific recommendations will be made in the report, each alternative policy will be reviewed in the light of both accepted accounting principles and practical objectives.

The Questions

On the basis of the available information, it appears that only a relatively small number of the companies which used 60-month amortization for tax purposes used regular or normal depreciation on their books. As previously stated, the majority of the companies recorded the amortization both in their accounts and for tax purposes. This practice does not give rise to any unusual problems in those cases where the use of emergency facilities ceased with the termination of the emergency period. In a large number of cases, however, the facilities will be used in peacetime produc-

tion and the fact of full or partial amortization in the books presents significant questions of accounting policy. This report deals with these questions.

The significant questions to be discussed are inherent in the following case which, though hypothetical, is illustrative of the type of situation with which the report deals. It is assumed that a company acquired $1,000,000 of emergency facilities under certificates of necessity in September of 1942. The company elected to use 60-month amortization for tax purposes, beginning with October, 1942. It also decided to use the amortization for book purposes. No non-necessity certificates were obtained, but following the date of the Presidential Proclamation, September 29, 1945, the company elected to accelerate its amortization and recompute its prior years' taxes accordingly. As of the date of the proclamation the facilities had been held and amortized for three years, and the amortization to September 29, 1945, thus amounted to $600,000. The unamortized balance of $400,000 is to be prorated between 1942, 1943, 1944, and 1945 for tax purposes, and claims for refund of taxes are to be filed for the first three years. The adjustment of the taxable net income in each of the years will be in the following amounts:

	1942 (3 months)	*1943* (12 months)	*1944* (12 months)	*1945** (9 months)
Amortization on 36-month basis.....	$83,333	$333,333	$333,333	$250,000
Amortization on 60-month basis.....	50,000	200,000	200,000	150,000
Reduction in taxable net income.....	$33,333	$133,333	$133,333	$100,000

*No claim for refund is necessary for 1945 since the adjustment will precede the filing of returns for that year.

The facilities are to be continued in use, and it was estimated at the end of 1945 that their over-all life, from time of acquistion, would be 10 years. The accounting questions which call for immediate decisions are:

1. Shall the facilities be completely written off on the books?
2. If not written off, at what net value should they be carried on the books?
3. In those cases where the emergency facilities are to be

carried on the books in an amount lower than cost less normal depreciation, to what extent and by what means should burden accounting and product costing recognize the regular or normal depreciation during the years following 1945?

Alternative Methods

Ignoring minor variations arising from special situations, the accounting treatment of amortized or partly amortized emergency facilities having postwar usefulness must follow in the case stated essentially one of the following five methods:

Method A—Complete write-off of assets in 1945 for both balance sheet and profit and loss purposes, with subsequent omission of depreciation charges.

Method B—Adjustment of the accumulated amortization reserve, and of the charge for 1945, to a basis of regular 10-year depreciation.

Method C—Retention on the books of the unamortized balance as of September 29, 1945, to be depreciated over the remaining 7 years of estimated useful life.

Method D—Adjustment of the unamortized balance as of September 29, 1945, to give effect to an appraisal by company officials, the adjusted balance to be depreciated over the remaining 7 years.

Method E—Complete write-off of assets in 1945 for balance sheet purposes, but with provision for depreciation for costing purposes in the ensuing years.

Following is a discussion of each method. In each case, the discussion will be based on the case data presented above.

Method A—Complete write-off of assets in 1945 for both balance sheet and profit and loss purposes, with subsequent omission of depreciation charges.

With respect to the accounting procedure to record the write-off, only two questions are presented—

1. Shall the adjustment be made by a direct write-off of the

asset or by recording a reserve in amount equal to the asset, the asset and reserve accounts to be continued on the books?

2. Shall the charge be to 1945 profit and loss only, or prorated between profit and loss and surplus?

Available information indicates that with respect to the first question, most companies favor the retention of the asset, with an offsetting reserve, rather than an actual direct write-off.

With reference to the second question, the alternatives in terms of the case data are (a) to charge 1945 profit and loss with the entire adjustment, $400,000; or (b) to make the following entry:*

Surplus (27 months, 10/1/42 to 12/31/44)	$300,000	
Profit and Loss (9 months in 1945).....	100,000	
Plant Account (or Reserve).....		$400,000

It is clear that each of these treatments raises serious questions in the area of accounting principles. To charge the full adjustment to profit and loss will distort the reporting of 1945 income to a considerable degree and while this distortion might be minimized, it cannot be entirely removed by showing the item as a special adjustment at the end of the profit and loss statement. On the other hand, charges against surplus are regarded by many as almost equally objectionable. Considerations of this character cast obvious doubts upon the expediency of Method A. It is recognized, however, that the war period was an abnormal one from an accounting as well as other points of view, and the desirability of charging to it the costs and losses applicable thereto is a strong consideration. These issues are discussed more fully in the *Journal of Accountancy* for November, 1945, in an article by Carman G. Blough entitled "Accounting for Expenses and Losses Allocable to Income of the War Period."

Of even greater significance is the fact that under Method A no depreciation of these facilities will be charged to operations during the remaining 7 years of estimated usefulness. Since it is usual accounting practice to prorate the cost of a depreciable asset over the estimated useful life of the asset and since the effect of Method A is to relieve future operations of their share of the cost of the

*The entry as stated does not give effect to the tax reduction for 1945 or the refunds for the prior years, nor does it reflect rebates of renegotiation refunds.

emergency facilities, careful consideration of the method seems necessary in view of its apparent wide adoption. Following is a summary of the advantages and disadvantages of this method.

Advantages of Method A

1. It conforms the books to the tax returns. Conformity of book accounts and tax returns is fairly common practice and is based on three considerations:
   a. Simplicity and ease of preparation of returns.
   b. Belief that differences between book and tax return charges for depreciation would militate against the taxpayer in controversies with the Bureau of Internal Revenue over permissible rates.
   c. Belief that differences between reported net income and taxable net income tend to confuse many minds, particularly in the case of published statements, and to cause misunderstandings.
2. The method shows to what extent plant costs of the war period have actually been recovered out of earnings. In this way it serves to correct the common but mistaken belief, held by many, that such costs are recovered by obtaining refunds and savings from tax and renegotiation proceedings.
3. The method is conservative, satisfying the belief of many that plant costs should be charged to the substantial wartime profits to protect the company against future uncertainties surrounding sales volumes, profit margins, and postwar losses. In so far as this argument favors an artificial equalization of profits it will not receive the support of accepted accounting principles. But it is sound in so far as it insists on charging war costs to the war period and relieves subsequent periods of costs not applicable to them. Where there is a margin of reasonable doubt as to the period to which plant costs are applicable, the decision no doubt will be influenced by such considerations as (a) expected higher material and labor costs in the postwar period, (b) low volume in the reconversion period, and

(c) increased depreciation on other plant assets not fully recognized in the regular depreciation rates.

Disadvantages of Method A

1. The view that profit determination is not a matter of tax regulations but of accounting principles and that the latter govern in cases of difference, militates against this method.
2. The view that plant costs continue over the useful life of the asset regardless of profit or tax situations would disapprove of complete write-off when further useful life is expected.
3. This method would result in an understatement of asset values in the books and on the balance sheet.
4. There would be an understatement of production costs—
   a. On the profit and loss statement.
   b. For purposes of cost analyses and comparison, in so far as no charges were included for items of plant in use.
5. Costs computed on this basis would have an undesirable influence on pricing policies, unless appropriate corrections were made.

Method B—Adjustment of the accumulated amortization reserve, and of the charge for 1945, to a basis of regular 10-year depreciation.

This method assumes that, since it is now found that the overall useful life is much longer than 5 years, provision for the war years should be made on the basis of the longer rather than the shorter life. If this is regarded as indicating an understatement of income for the closed years, then an adjustment of surplus is called for. This adjustment would be made by an entry similar to the following, recorded as of September 29, 1945:

Reserve for Amortization.....	$600,000	
Depreciation (9 months in 1945).....	75,000	
Reserve for Depreciation.....		$300,000
Surplus (27 months, 10/1/42 to 12/31/44)		225,000
Amortization (9 months in 1945).....		150,000

Probably most accountants will wish the income determinations up to December 31, 1944, to stand, and will not look with favor on an adjustment which results in an addition to the surplus account. They may suggest, instead, that a reserve for war losses be created. The adjustment would then differ from the foregoing entry in that the surplus credit would give way to a credit to Reserve for War Losses.

Advantages of Method B

This method is the direct opposite of Method A, and therefore the considerations listed as disadvantages of that method become, when stated affirmatively, advantages of Method B. In the case of a company which adheres to the above principles, this method presumably would imply that the postwar use of the facilities was not determined till the close of the war. It would thus represent an adjustment of the accounts to reflect a changed view of the situation. The advantages may be stated as follows:

1. The method shows the cost of the asset less depreciation based on useful life, as now estimated.
2. It adjusts the amount charged to the war period to accord with present views.
3. It provides a basis for charging future operations with the annual cost expiration, as now estimated.

Disadvantages of Method B

For those who disagree in principle with the foregoing position, the principal objections may be stated as follows:

1. It is an unrealistic attempt at accounting precision which is inconsistent with the estimated basis of depreciation accounting.
2. Provision of a reserve for postwar losses in amount identical with the adjustment of the amortization reserve is as arbitrary as the original reserve provisions were.
3. The adjustment involves many changes in detailed plant accounts.

In one respect it may be noted that Method A and Method B have much in common. Both involve substantial adjustments of

book figures as at September 29, 1945, and many companies will hesitate to make such extensive changes in their books.

Method C—Retention on the books of the unamortized balance as of September 29, 1945, to be depreciated over the remaining 7 years of estimated useful life.

This method represents a compromise between "A" and "B". According to it, neither the prior charges to operations, nor the reserve account at September 29, 1945, nor the asset account at the same date, would be adjusted. The unamortized balance of $400,000 would be considered as the cost of the future use of the asset—over a period of 7 years—and the annual depreciation charge would be $57,143 as compared with $100,000 under Method B. In a given situation the amount of difference between the annual charge under Method B and that under Method C will depend on (1) the number of years during which amortization was taken prior to termination of the emergency period and (2) the number of years remaining to the asset.

Advantages of Method C

1. It satisfies the requirements of the time allocation theory of plant accounting with respect to the balance of the facilities account at the end of the war, and without any of the adjustments called for by the other methods.
2. It is reasonable especially in those cases when the amortization period was short.
3. It reflects a proper reduction in plant cost chargeable to peacetime production as compared with wartime production, and takes account of excessive use during the war years, coupled with inadequate maintenance, where such conditions occur.

Disadvantages of Method C

1. The method would approach the same result as Method A when the amortization period was long, and as Method B when the amortization period was short. It could not well satisfy the proponents of both methods, even as a compromise.

2. It results in a periodic postwar charge, the amount of which is larger or smaller, according as the period of war amortization was shorter or longer. Such a result could scarcely be designated as a "normal" or "regular" depreciation charge.

Method D—Adjustment of the unamortized balance as of September 29, 1945, to give effect to an appraisal by company officials, the adjusted balance to be depreciated over the remaining 7 years.

The method does not envisage an appreciation of asset values in excess of original cost. Rather, it is the thought that the adjustment has for its purpose the restatement of the depreciation so as to provide for a reallocation of the original cost of the asset as between the war period and the postwar period. The method results in an adjustment similar to that in Method B, but not necessarily to a basis indicated by regular depreciation.

Advantages of Method D

1. It records a net asset value and provides for future depreciation, on a basis of reasonable value at the end of the war, thus adjusting for the abnormal conditions under which the asset was acquired and used.
2. It meets the requirements especially of those situations where the asset was originally acquired without any thought of postwar use.
3. It permits a valuation of the asset based on peacetime requirements. While resulting in reasonable charges to future postwar years for facilities used therein, it excludes from peacetime charges the cost of unnecessary or ill-adapted facilities. Reference is made to the cost of a certified enlargement of previously existing facilities which now represents excess capacity, or the acquisition of facilities whose capabilities or tolerances provide a degree of precision in production which is not required for the normal production of the plant.

Disadvantage of Method D

1. The principal objection to this method is the difficulty of finding a reliable basis of appraisal. This difficulty is considerable in ordinary circumstances, and the abnormal conditions of war increase the difficulty. Nevertheless, it overcomes to some extent the arbitrary results of the other methods to make an appraisal which takes all the presently known circumstances into account.

Method E—Complete write-off of assets in 1945 for balance sheet purposes, but with provision for depreciation for costing purposes in the ensuing years.

This method is similar to Method A with respect to the book and balance sheet disposition of the emergency facilities but differs from it in that provision is made for recording regular or normal depreciation on these facilities for costing purposes. Some companies have expressed themselves as being quite concerned with the necessity for recognizing this element of implied cost. Several procedures are available for this purpose. The first involves a charge to operations for regular depreciation with an offsetting credit to cost of goods sold. The burden rates are adjusted to absorb the charge and thus provide for its inclusion in product costs. At the same time, an entry is made charging the amortization reserve and crediting the depreciation reserve. The effect of the credit to cost of sales is to leave the final net profit unaffected *except* to the extent that there is an increase or decrease in work in process or finished goods inventories. Where the credit is to "non-operating" income instead of cost of sales, the final net profit also is not affected, but a different "operating" profit results from the provision.

A variation of the foregoing procedure makes no provision in the books for an operating charge, but provides for its inclusion in costs through burden rates. The result of this procedure is to show cost of sales in excess of the actual cost, which excess is offset by an increased overabsorption—or decreased underabsorption—of burden, so that the method is self-adjusting in respect to cost of sales. It is subject to the same comment as the first procedure with respect to the possible inclusion of part of the charge in inventories.

Advantages of Method E

1. It includes implied depreciation in cost data:
   a. To provide a better basis for cost comparisons as between several periods.
   b. To provide a better basis for cost comparisons as between competing branches or departments which are dissimilar with respect to the relative amounts of emergency facilities involved.
   c. To provide a better basis for "make-or-buy" analyses.
   d. To inform management as to normal costs which might be expected if an expansion of capacity is planned.
   e. To furnish a more reliable basis for pricing than would otherwise be available.
2. The method serves to obtain the advantages listed immediately above without sacrificing the advantage of conforming the books to the tax returns.

Disadvantage of Method E

1. The main objection to this method is the basic objection to all imputed or hypothetical costs or incomes. They introduce an internal inconsistency into the accounts. Since plant has a long life, this inconsistency will continue into later years, when management has probably become concerned with other things.

Concluding Comments

The several methods have been described without attempting to express a preference among them, other than as may be suggested by the weight of the advantages and disadvantages attributed to them. It is to be expected that these advantages and disadvantages will be of varying importance in different cases. By studying these pros and cons applied to its own situation, and evaluating their significance according to the circumstances, it is believed that management will receive considerable guidance toward a sound conclusion. The problem arises from violent economic and financial

transition with which ordinary accounting practices cannot adequately deal. This does not necessarily mean that they must be met with accounting innovation, but rather that any method pursued will have marked shortcomings, and it becomes largely a matter of choosing the method with the fewest objections.

A number of considerations emerge which it may be worth while briefly to restate:

1. The problem furnishes one more example of the fact that in many cases cost and accounting practices cannot conform to the provisions of tax regulations designed to give statutory definition of income as a basis for tax assessment. While such divergencies are regrettable, there is no advantage in ignoring them, especially when, as in the present case, tax provisions are adopted for reasons of public policy largely unconnected with income determinations upon an accounting basis.
2. Another source of divergent viewpoints lies in what may be called the purely financial accounting approach, as contrasted with a predominantly administrative approach, the latter including the uses of costs for various administrative purposes. The first or financial approach is concerned with sound balance sheet and income statement presentations. Its rules of practice are directed to those purposes, and they are obviously of great importance. The second or administrative approach is concerned with information for guidance on operating problems, and its methods are effective in proportion as they serve those purposes well. In a general way the figures for administrative purposes are subdivisions or allocations of the financial figures—an idea reflected in the expression that costs "tie-in" with financial accounts. But for administrative purposes it is frequently desirable to go outside the financial figures and use cost factors pertinent to the questions in hand, even though they are not reflected in the financial accounts. Properly understood, this situation presents no conflict. Furthermore the use of such terms as "financial" and "administrative" as indicating opposing concepts is often unfortunate and unnecessary.

"Financial" accounting is concerned with questions which are administrative problems to some officer of the business, usually the president or the treasurer.

Applying these considerations to the problem of depreciation, cost accounting practices are not necessarily restricted to those procedures sanctioned by financial accounting considerations. But the two should be reconcilable, and there is no necessary conflict between them.

3. The question of the basis of recovery of plant costs arises in a peculiarly difficult form. When tax savings arise from special amortization allowances in excess of those called for by ordinary depreciation rates, there is an appearance of something in the nature of cost recovery. Nevertheless it is well to bear in mind that cost recovery is accomplished only when a sale is completed at a price which covers all costs. Variations in tax assessments reflect simply the conceptions of Congress of an equitable basis of apportionment of the costs of Government among the various groups of citizens, and such conceptions are frequently based upon other than accounting considerations.
4. The war years have furnished another chapter of experience bearing upon the depreciation problem. In particular, it has afforded additional examples of fully depreciated assets in continued use, without a corresponding depreciation charge being made in the financial accounts. However satisfactory this practice may be for the purpose of income determination, it is clear that it does not, in the conditions which here have been reviewed, adequately deal with cost and administrative accounting problems. Whether an answer to this problem may be found within the procedures of the financial accounting system, or must be sought in the form of separate and supplementary records, is a matter for further accounting exploration.
5. The weight of financial opinion is likely to continue to militate against anything in the nature of "padding" inventory values, and, generally speaking, the inclusion in them of hypothetical or imputed costs will be regarded in

that light. But many variations of the situation may occur. If for example goods are produced on a number of units of equipment, some of which are fully depreciated and others are not, it would be artificial to compute the cost of some goods as including full depreciation, and of other similar goods without any depreciation. It would be more reasonable to regard the total depreciation charge, based on assets not fully depreciated, as a common charge to all goods produced. If in these circumstances some part of this charge were included in inventory costs, little objection could be raised, since it would reflect a cost compatible with the requirements of financial accounting. Other situations would likewise have to be considered on their merits.

Cases

Case 1

This case concerns a medium sized company in the chemical industry located in the eastern part of the United States. Approximately 25 per cent of its fixed assets have been acquired under certificates of necessity. The company has taken amortization on the 60-month basis for tax purposes. This amortization has also been recorded on the books, but the amortization entries have been designed to afford a record of regular depreciation on the emergency facilities as well as to write off the assets. The entry is as follows:

Dr. Depreciation (at regular rates)
Amortization (for excess of amortization over depreciation)
Cr. Reserve for Depreciation
Reserve for Amortization

The depreciation was charged to production and included in burden rates, but the amortization was considered as a non-operating charge to profit and loss and not included in the burden rates.

Some of the certificated emergency facilities ceased to be useful with the end of hostilities. The net balance of these facilities will be written off on the books as of September 29, 1945, and the taxes for 1942, 1943, and 1944 will be recomputed for the accelerated amortization. The book charge for the additional amortization will be prorated, net of the tax savings, between surplus and profit and

loss. The portion chargeable to 1945 income is to be considered as an operating charge but will show up as unabsorbed burden since the 1945 burden rates were not revised to include the accelerated amortization.

With reference to the certificated assets which will continue to have postwar usefulness, the same book adjustments and tax recomputations will be made as in the case of those facilities which were abandoned. The useful facilities, however, will continue to be shown on the company's balance sheet fully offset by the reserve. Furthermore since the company wishes to include regular depreciation on these facilities in its future costs, provision will be made for such charge with an offsetting credit to non-operating income. Periodically an entry will be made charging reserve for amortization and crediting reserve for depreciation in the amount of the period's provision for implied regular depreciation. Under this procedure the amortization reserve will eventually be cleared of its balance, and at that time the charges for the implied depreciation on the emergency facilities will cease.

The foregoing procedure for inclusion of the implied depreciation in cost is of particular significance currently for purposes of comparative cost analysis as between two of the company's plants whose managements are competing for certain war-developed production. The cost comparisons are of immediate importance since they may govern a top management decision to continue or to abandon one of the plants.

Case 2

This large manufacturing corporation acquired emergency facilities equal to about one-eighth of the total fixed assets. Amortization on a 60-month basis was taken for tax purposes and also recorded on the books through credits to a valuation reserve and charges to operations. Hourly burden rates for costing purposes included, however, only a provision for normal depreciation.

The amortization taken prior to the Presidential Proclamation on all of the emergency facilities will be adjusted for the shortened amortization period and the assets fully amortized by credits to the valuation reserves. The book adjustment will be accomplished through a charge to surplus, for the portion applicable to the period

1941 to 1944 net after tax and renegotiation recovery, and to profit and loss for the portion applicable to 1945.

Thus the facilities having peacetime use, and these comprise substantially all of the certificated assets, will have no net book value but will continue to be carried in the accounts along with reserves of equal amounts.

Hourly burden rates will include normal depreciation for fully depreciated facilities. In other words, the rates will equal those required to liquidate depreciation of all facilities in use at planned production volume. On the other hand, at planned volume the rates will exceed those required to liquidate actual burden computed to include only depreciation on assets not fully depreciated. The offsetting credit resulting from inclusion in burden of depreciation on fully depreciated facilities will be treated as a favorable variance account.

This procedure has been adopted so that product cost estimates will continue to include a depreciation charge even though "the company as a whole has absorbed the entire amortization." It not only recognizes implied depreciation as an element of product cost, but also automatically provides for its inclusion in the analysis of "make-or-buy" situations and in comparison of costs of competing departments or branch plants.

Case 3

This case pertains to an industrial corporation located in the Middle Atlantic States engaged in the manufacture and assembly of complete apparatus in a particular field. The corporation is large as compared with other corporations engaged in the same industry. During the process of converting the normal commercial productive facilities of the company to war purposes, it was deemed to be advantageous to obtain Certificates of Necessity for certain major expenditures to acquire facilities which would be necessary in expanding the capacity to produce apparatus for the armed services. These acquisitions approximated 7½ per cent of the total fixed assets of the company.

The company elected in the beginning of 1942, in accordance with the regulations of Section 124 of the Internal Revenue Code, to amortize the expenditures over a 60-month period beginning

with the month following the month in which the facility was completed or acquired. This policy was followed throughout the national emergency, and the calculated amortization was claimed for tax purposes, was recorded on the books, and was also charged to manufacturing operations in the same manner as is customarily followed in the case of charges for normal depreciation.

When the Presidential Proclamation ending the national emergency, as defined in Section 124 of the Internal Revenue Code, was issued as of September 29, 1945, it was decided to claim as additional tax deductions, through filing amended income tax returns, the unamortized balance of the acquisition costs by allocating the remaining balance over the elapsed months from the various dates of acquisition. In following this procedure, of course, the possibility of claiming abandonment losses on facilities retired from service was precluded. This decision was made because of the fact that the company was renegotiated for excess profits in 1943 and 1944, and it was ascertained that the benefits to be derived in a refund of so-called excess profits exceeded the differential obtainable on abandonment losses because of the tax rate differential between the various years.

With respect to the accounting treatment to be accorded certificated assets for profit and loss purposes, no definite decision has been made, at the moment, but the company is considering, in collaboration with their public accountants, the various effects on profit and loss, as well as operating costs, in subsequent years, of the several courses of action which seem to be available, viz:

1. Inasmuch as the rapid amortization over a 60-month period or the period of the then existing National Emergency, is allowable by law, the unamortized balance at September 29, 1945, might legitimately be taken as an additional operating charge for 1945. This procedure would provide definite relief to operating charges in reconversion years, wherein sales competition will definitely be severe and volume might not be up to full capacity.
2. The unamortized balance at September 29, 1945, adjusted for retirements, could be depreciated on a straight-line basis over the remaining estimated years of life commencing with October 1, 1945. This method would result

in a higher charge to future operations than the first method, but a lower charge than would result if depreciation were based on original cost.

3. The practice may be continued of charging operations on a 60-month basis for the amounts necessary to write off all certificated facilities over the 60-month period on the assumption that, the facilities having been acquired for wartime purposes, they would not have utility value over the normal life of such assets. This can be justified in part by the fact that the facilities have operated on multiple shifts with inexperienced operators, and with only a minimum of maintenance, thereby definitely shortening the life of the facilities.

The foregoing methods which are being considered merely outline the possibilities, and no definite decision has been reached. However, irrespective of which method is adopted, the customary procedure of the company will be followed with respect to the retirements of fixed assets; that is, when the reserve for depreciation equals the amount of the acquisition costs, all so-called uncatalogued assets, in other words, those carried in composite accounts, will be removed from both the asset and reserve accounts. The catalogued facilities, comprising those major items which are carried in itemized accounts, would be carried in the fixed asset and reserve accounts until ultimate disposition is made, at which time, the accounts would be adjusted accordingly.